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Mississippi State, MS 39762  
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TO: Messrs. Shakeman, Coyne, Hirt, and Leininger  
FROM: WST Warren S. Thompson  
SUBJECT: Source of Contamination of Reilly's Deep Well

Because of the relatively large quantity of coal-tar products in Reilly's deep well, it would appear unlikely that the contamination resulted from fugitive quantities that entered the water system ~~or~~ entrained in flood water<sup>or</sup> from small leaks in condenser coils. One or more massive influxes over relatively short time periods seem more plausible.

The plumbing at wood treating plants is so complex that one can easily develop scenarios for contamination of the water supply with creosote or other preservatives. Probability of contamination is increased by the retorts, the operating pressure in which exceeds by a factor of two or more the supply pressure in most water mains and can result in pressure backflow if there is a direct water connection not equipped with proper backflow preventers. Mr. Hennessy's testimony and correspondence from Mr. Wheeler to Mr. Finch dated 12-69 (H-39), which discusses the installation of a condenser to control emissions from the plant's steam-ejector vacuum system, indicate that the plant did not have a direct connection to the water supply that was used in the treating process. A condenser would be the most likely point of connection of a water supply and the strong evidence that the plant was not equipped with a condenser is a source of amazement to me. The only other direct connection that I can think of would be to the retorts to supply water for closed steaming. Although such a connection could easily account for contamination of the well, it is unlikely that this was the case. There is no evidence that closed steaming was used at the plant. In any event, the advent of closed steaming in the 1960's postdates by many years the period during which we believe the contamination occurred.

We know that Mr. Finch installed a direct line from the well to the condensers in 1970; but again, this is a much later date than the probable date of contamination. It is possible, of course, that Mr. Finch's idea for a direct connection was

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not an original one; his predecessors may have made similar connections that were subsequently removed. One can develop a complex scenario that would account for contamination of the well from such a connection. However, this event would require such an unlikely combination of equipment failure and employee negligence--all in consort with each other--that it seems unlikely at best.

I have tried without much success to visualize a rational means by which the compressor and associated air lines that were jointly used to pump water and supply air for various other purposes may have been the avenue for the contamination. This possibility cannot be completely eliminated in the absence of definitive information on the plant's air distribution system. However, the most obvious scenario would require that the air compressor tank be filled with tar or tar products before flow to the well could occur. In a company where there appeared to be a steady flow of correspondence on even minor problems related to equipment failure, one would expect to find a reference to such an accident.

The cryptic review of possible avenues for contamination summarized above and discussed with Dennis in Indianapolis does not include back-siphonage. Its omission is due to a myopic view on my part of the water system. I have assumed that this system was composed of a well and a connection-free main (prior to 1970) that discharged directly into a pond from which water was pumped to various points in the plant. This mental picture places the pump upgrade from the pond and not a great distance from it. If any part of this image is in error, and in fact there were connections to the main that supplied water to any part of the plant, or if the pump was downgrade from the pond, back-siphonage may indeed be responsible for the well contamination. Back-siphonage could have occurred through an open hose connection or break in the water main anytime that the air to the well was turned off if the connection and main were not equipped with backflow preventers.

It is clear from Mr. Lauck's memo of November 23, 1954, to Mr. Horner that breaks in the water main did occur because of corrosion. It thus becomes important to know more about the water distribution system from the well. If indeed it was limited to a connection-free main between well and pond, the elevation of the two points would be of interest.

I look forward to working with you the week of March 6.

WST:bw